H.R. 3245, “COMMERCIAL SPACE ACT OF 2003”

BEFORE THE

SUBCOMMITTEE ON SPACE AND AERONAUTICS

COMMITTEE ON SCIENCE

U.S. HOUSE OF REPRESENTATIVES

Testimony of

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1. **SHOULD THE GOVERNMENT REGULATE HUMAN SPACEFLIGHT? IF SO, WHAT SHOULD THE PUBLIC POLICY OBJECTIVES (E.G., ENCOURAGING DEVELOPMENT OF THE INDUSTRY, PROTECTING THIRD PARTIES, PROTECTING PASSENGERS, ETC.) OF THAT REGULATION BE AND HOW SHOULD THEY BE BALANCED?**

Summary Answer: The government should regulate commercial human spaceflight. The Commercial Space Launch Act of 1984, as amended and recodified[1] ("CSLA"), provides an appropriate general framework for the regulation of human spaceflight. Some revision of the act is desirable to clarify that the CSLA applies to human spaceflight and necessary to establish reasonable safety and liability regimes for human spaceflight.

Current Regulation of Commercial Space Transportation

The Department of Transportation, and by delegation the Federal Aviation Administration's Associate Administrator for Commercial Space Transportation ("FAA/AST"),[2] licenses and regulates launches and reentries[3] under the CSLA.[4] The FAA/AST licenses and regulates launches and reentries "[c]onsistent with the public health and safety, safety of property, and national security and foreign policy interests of the United States . . . ."[5]

Initially, the FAA/AST's authority applied only to launch operations. The authority was extended by a 1998 amendment to the CSLA to include reentry operations.[6] The purpose of the amendment was to "establish a statutory framework for the licensing of commercial reentry activities . . . ."[7] Prior to the adoption of that amendment, this Committee noted: "Currently, there is no licensing procedure to conduct reentry from space. Such reentry is

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1 Title 49, Transportation, Subtitle IX, Commercial Space Transportation, Chapter 701, Commercial Space Launch Activities, 49 U.S.C. §§ 70101-70121.

2 *See* 49 C.F.R. § 1.47(v) (providing that the Federal Aviation Administrator "is delegated authority to . . . [c]arry out the functions vested in the Secretary by 49 U.S.C. Subtitle IX"); *see also* 50 Fed. Reg. 9036 (Mar. 6, 1985) (delegating authority under the CSLA to the Director of the Office of Commercial Space Transportation) and 60 Fed. Reg. 62762 (Dec. 7, 1995) (transferring the Director of Commercial Space Transportation's CSLA authority to the FAA Administrator).

3 A license is required to "launch a launch vehicle" or "reenter a reentry vehicle." 49 U.S.C. § 70104(a)(1). A launch vehicle is "(A) a vehicle built to operate in, or place a payload in, outer space; and (B) a suborbital rocket." *Id.* § 70102(7). A reentry vehicle is "a vehicle designed to return from Earth orbit or outer space to Earth, or a reusable launch vehicle designed to return from Earth orbit or outer space to Earth, substantially intact." *Id.* § 70102(14).

4 The FAA/AST's licensing and regulatory authority extends to: 1) launches/reentries in the U.S.; 2) launches/reentries by U.S. persons or entities anywhere in the world; 3) launches/reentries by U.S. controlled foreign entities on the high seas or from international air space, unless there is an agreement that a foreign government will license the launch/reentry; and 4) launches/reentries of U.S. controlled foreign entities in foreign countries if there is an agreement that the U.S. will license the launch or reentry. 49 U.S.C. § 70104(a). The FAA/AST also licenses and regulates launch sites and reentry sites. *Id.*

5 *Id.* § 70105(a)(1).

6 Commercial Space Act of 1998, Pub. Law 105-303, § 102, 112 Stat. 2843, 2846-2851 (1998).

7 Commercial Space Act of 1997, H.R. Rep. No. 105-347, at 20.

vital if new technologies in reusable launch vehicles are to be exploited and the opportunity to conduct commercial experiments in space for return to Earth is to be taken."[8]

It is not entirely clear that the FAA/AST's licensing authority under the CSLA extends to human spaceflight. There is no explicit mention or clear embrace of humans, whether crew or passengers, in the CSLA. At the same time, there is no prohibition on the licensing of humans. The FAA/AST appears to have taken the position that it has the authority to license human spaceflight.[9]

A license under the CSLA is required "to launch a launch vehicle . . . or to reenter a reentry vehicle."[10] Launch means "to place or try to place a launch vehicle or reentry vehicle and any payload from Earth (A) in a suborbital trajectory; (B) in Earth orbit in outer space; or (C) otherwise in outer space . . . ."[11] A "payload" means "an object that a person undertakes to place in outer space by means of a launch vehicle or reentry vehicle . . . ."[12] While the term "payload" does not include humans, the definition of "launch" does not preclude humans.

The Need to Regulate Commercial Human Spaceflight

There are at least two reasons why the government should, or would want to, regulate commercial human spaceflight. First, the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies[13] ("Outer Space Treaty"), to which the United States is a party, provides that States "bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities . . . ."[14]

The "activities of non-governmental entities . . . shall require authorization and continuing supervision . . . ."[15] The treaty does not distinguish between manned and unmanned flight. The treaty does not specify the kind or degree of regulation required; rather it leaves that to each State party to decide with respect to its national space activities.

Second, there are public policy reasons for regulating commercial human spaceflight. The government has an interest in ensuring that such flight is consistent with fundamental public policy objectives, such as public safety, national security, and foreign policy interests of the

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8 Civilian Space Authorization Act, Fiscal Years 1998 and 1999, H.R. Rep. No. 105-65, at 23. The Committee pointed out that the FAA/AST had previously taken the position that "a reentry [was] subject to a launch license requirement on the grounds that reentry entailed the placing of a launch vehicle in a suborbital trajectory 'from Earth orbit [and that the FAA/AST had] since abandoned that position . . . ." *Id.*, at 60; *see also* Commercial Space Act of 1997, H.R. Rep. No. 105-347, at 21 (providing the same).

9 *See, e.g.*, Financial Responsibility Requirements for Licensed Reentry Activities, Notice of Proposed Rulemaking ("NPRM"), 64 Fed. Reg. 54448, 54457 (Oct. 6, 1999) (providing that "[w]ith the development of RLV technology comes the possibility of crewed or piloted launch vehicles whose operations would be subject to FAA licensing"). In the same NPRM, the FAA solicited comments on the subject of a "regulatory program that would . . . address passenger safety." *Id.*

10 49 U.S.C. § 70104(a).

11 *Id.* § 70102(3).

12 *Id.* § 70102(9).

13 Outer Space Treaty, *done* Jan. 27, 1967, 18 U.S.T. 2410.

14 *Id.*, art. VI.

15 *Id.*

United States. This Committee made note of precisely these public policy concerns when adopting the CSLA:

> Government supervision over the activities of private parties who provide commercial launch services must be exerted to safeguard life and property, to prevent actions that would jeopardize national security and foreign policy, and to ensure that U.S. treaty obligations, such as those in the Outer Space Treaty, are met.[16]

While it may be clear that some government regulation of commercial human spaceflight is in order, questions remain as to *when to regulate; how to regulate; and how much to regulate.* The answer to the first question depends on the state of the commercial human spaceflight industry. In other words, how imminent is commercial human spaceflight? The issue of how and how much to regulate depends to a large extent on the policy objectives the government seeks to achieve. It also depends on the general philosophy and approach to regulation of high technology commercial endeavors.

Public Policy Objectives of Commercial Human Spaceflight Regulation

The policy objectives of the CSLA are to: 1) "promote economic growth and entrepreneurial activity through the use of the space environment . . . ;" 2) "encourage the United States private sector to provide launch vehicles, reentry vehicles, and associated services . . . ;" and 3) provide for licensing and regulation of launches and reentries consistent with "the public health and safety, safety of property, and national security and foreign policy interests of the United States."[17]

These policy objectives also support human spaceflight. To accomplish these objectives with respect to human spaceflight, the following key ingredients of human spaceflight regulation should be considered:

- A clear articulation of the FAA/AST's authority to license and regulate commercial human spaceflight. Private sector initiatives are generally encouraged by regulatory certainty and discouraged by regulatory uncertainty.

- Reasonable safety protection of passengers and crew. The FAA/AST has interpreted its public health and safety mandate under the CSLA as directed at the public at large, and not extending to launch service participants, e.g., launch site personnel. The question is whether the FAA's safety mandate should extend at least to passengers in order to establish reasonable safety protection. A regime with virtually no safety oversight of passengers may not be sustainable if the goal truly is to promote an industry of public space travel.

- Reasonable qualification criteria for crew and passengers. Given the high-risk nature of spaceflight at this stage of industry development, qualification criteria may be advisable for both crew and passengers. The FAA already imposes certain qualification requirements on ground-based launch safety personnel, which may be applied or adapted for crew. Qualification criteria for passengers should be designed to ensure a minimum level of safety for the passenger, while not being so burdensome as to discourage human spaceflight.

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16 Commercial Space Launch Act, H.R. Rep. No. 98-816, at 8.

17 49 U.S.C. § 70105(b)(1)-(3).

- Reasonable liability and insurance protection for passengers and crew. The liability regime for passengers should be compatible with the current CSLA provisions for commercial space transportation, which have worked well. At the same time, the regime must offer the necessary liability and insurance protection to promote commercial human spaceflight. The current regime, as set forth in the CSLA, has three major components: 1) cross waivers; 2) third party liability insurance; and 3) indemnification:

  - The CSLA requires the licensee to enter into cross waivers of liability with its customers whereby each party agrees not to sue the other and to assume responsibility for loss or damage it sustains and for injury, loss or damage sustained by its employees.[18] The licensee and customer must each extend these waivers to their respective contractors and subcontractors involved in launch/reentry services requiring them not to sue the other party or the other party's contractors and subcontractors.[19]

  - The CSLA requires the licensee to obtain third party liability insurance in an amount stipulated by the FAA/AST.[20] This insurance must protect not only the licensee, but also the United States, the licensee's contractors and subcontractors and the customer, as well as the contractors and subcontractors of the customer.[21]

  - The CSLA provides that indemnification is available against third party claims above the insured amount, subject to certain conditions.[22] See question 2, below.

  Should a passenger be required to sign a liability waiver by which it relinquishes its rights to sue the licensee and other launch participants assuming the passenger is injured?[23] The benefit of such a waiver would be that the passenger could not get sued by the licensee or other launch participants. Currently, launch customers, which are required to sign waivers, protect themselves through insurance. Is it reasonable to expect passengers to take out life insurance? Would such insurance even be available (at a reasonable price) for a risky activity such as spaceflight? Or should the licensee be required to indemnify the passenger through limited "carrier" liability?

  Should crew members be required to sign liability waivers? Assuming crew members are the employees of the licensee, such employees are not now required to sign waivers. While the employees are not full beneficiaries of the waivers, they are afforded some protection.[24] Precisely how far this protection extends and whether it would be adequate is not entirely clear.

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18 *Id.* § 70112(b); 14 C.F.R. § 440.17 and Part 440, Appx. B, Agreement for Waiver of Claims and Assumption of Responsibility ("Waiver Agreement"). The purpose of the cross waivers is: "(1) to limit the total universe of claims that might arise as a result of a launch; and (2) to eliminate the necessity for all these parties to obtain property and casualty insurance to protect against these claims." Commercial Space Launch Act Amendments of 1988, S. Rep. No. 100-593 (1988), at 14.

19 14 C.F.R. § 440.17(b); Waiver Agreement, *supra* note 18, § 4.

20 49 U.S.C. § 70112(a).

21 *Id.* § 70112(b).

22 *See infra* notes 37-39 and accompanying text (describing indemnification under the CSLA).

23 *See Martin Marietta Corp. v. International Telecomm. Satellite Org.*, 991 F.2d 94, 100 (4th Cir. 1992) (providing that "neither the language of the [CSLA] Amendments nor their legislative history reflects a Congressional intent to protect parties from liability for their own gross negligence").

24 For example, the customer agrees to hold such employees harmless from any liability arising out of claims from customer's contractors and subcontractors. Waiver Agreement, *supra* note 18, § 5(b).

Should passengers be considered third parties and, thus, beneficiaries of the licensee's third party liability insurance in the event of an accident resulting in passenger injury or death? If not, should the passenger be protected as an additional insured from claims by third parties? Should the passengers be entitled to CSLA indemnification? Or should the licensee be required to indemnify the passenger through limited "carrier" liability?

The same questions apply to the crew. Assuming crew are employees of the licensee, the FAA/AST does not consider them third parties.[25]

- Minimal regulation. Private industry is best served by minimal regulation, *i.e.*, regulation only as necessary to serve essential public policy objectives. This is especially true for evolving high technology industries, such as, space transportation. Excessive regulation can stifle technological development. The technology should drive the regulation, not vice versa. The CSLA espouses this approach. It provides that launch and reentry should be regulated "*only to the extent necessary* . . . to ensure compliance with international obligations of the United States and to protect the public health and safety, safety of property, and national security and foreign policy interests of the United States."[26]

2. **SHOULD THE GOVERNMENT OFFER INDEMNIFICATION FOR COMMERCIAL HUMAN SPACE FLIGHT, AND IF SO, AGAINST WHAT SORTS OF LIABILITY? HOW SHOULD ANY INDEMNIFICATION RELATE TO EXISTING POLICIES AND INTERNATIONAL TREATIES?**

Summary Answer: There appears to be no reason to treat a human spaceflight differently than unmanned flight as far as indemnification of the licensee and its contractors, subcontractors, and customers and the customers' contractors and subcontractors are concerned. However, whether the passenger and crew should be entitled to indemnification depends on the broader liability regime selected for these individuals.

International Treaty Obligations

The United States may be held internationally liability for damage caused by launch vehicles or their payloads, or the component parts of launch vehicles or payloads, under certain conditions. This liability is imposed by the Outer Space Treaty[27] and the Convention on International Liability for Damage Caused by Space Objects[28] ("Liability Convention") and general principles of international law.

The Liability Convention provides that a launching state is "absolutely liable to pay compensation for damage caused by its space object on the surface of the Earth or to aircraft in flight."[29] Absolute liability means that it is not necessary to prove fault. "In the event of damage being caused elsewhere than on the surface of the Earth to a space object of

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25 Compare the FAA's definition of "third party" in 14 C.F.R. § 440.3(a)(15)(ii) (providing specifically that U.S. government personnel are third parties).

26 49 U.S.C. § 70101(a)(7). (Emphasis added).

27 Under the Outer Space Treaty, "[e]ach State Party to the Treaty that launches or procures the launching of an object into outer space [or] from whose territory or facility an object is launched, is internationally liable for damage to another State Party by such object or its component parts . . . ." Outer Space Treaty, art. VII.

28 Liability Convention, *done* Mar. 29, 1972, 24 U.S.T. 2389.

29 *Id.*, art. II.

one launching State or to persons or property on board such a space object by a space object of another launching State," liability is based on fault.[30]

Liability rests with the "launching state," which is defined as the State "which launches or procures the launching of a space object [or a] State from whose territory or facility a space object is launched."[31]

Liability under the Outer Space Treaty and the Liability Convention applies to the United States, as a party to these treaties. The treaties do not impose liability directly on private companies, such as launch companies and their contractors or customer. Nor do they impose liability directly on private individuals, such as crew or passengers. On the other hand, the United States may be held liable under the treaties for the activities of these entities and individuals because the United States bears "international responsibility" under the Outer Space Treaty for national activities in space.[32]

Needless to say, the Outer Space Treaty and Liability Convention are not the only sources of liability for the licensee and its contractors, subcontractors and customers, or for passengers. These parties could also be held liable under private tort law, even for damage in a foreign country.[33]

Current Indemnification Regime for Commercial Space Transportation

The CSLA requires that a launch or reentry licensee obtain third party liability insurance (or demonstrate financial responsibility) to compensate claims from third parties for the "maximum probable loss."[34] The FAA/AST determines the amount of insurance required.[35] That amount shall not exceed $500 million.[36] In practice the FAA/AST requires considerably less. The amount varies from launch vehicle to launch vehicle.

The CSLA provides for indemnification for claims above the insured amount, subject to certain conditions. Adopted as part of the 1988 Amendments to the CSLA, the indemnification provision allows:

> To the extent provided in advance in an appropriation law or to the extent additional legislative authority is enacted providing for paying claims . . . the Secretary of Transportation shall provide for the payment by the United States Government of a successful claim . . . of a third party . . . resulting from an activity carried out under the license . . . .[37]

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30 *Id.*, art. III

31 *Id.*, art. I(c).

32 *See supra* note 14 (setting forth the international responsibility of the United States for its national activities in space pursuant to the Outer Space Treaty, art. VI).

33 *See* Liability Convention, art. XI.2 (providing that "[n]othing in this Convention shall prevent a State, or natural or juridical persons it might represent, from pursuing a claim in the courts or administrative tribunals or agencies of a launching State").

34 49 U.S.C. § 70112(a)(1)(A).

35 *Id.* § 70112(a)(2).

36 *Id.* § 70112(a)(3)(A)(i).

37 *Id.* § 70113(a)(1).

The limit of the indemnification is $1.5 billion above the insurance amount.[38] The indemnification is available for claims of a third party against the licensee or a contractor, subcontractor or customer of the licensee, as well as a contractor or subcontractor of the licensee's customer.[39]

The rationale behind the indemnification was that there was not sufficient commercial insurance available at a reasonable price to protect against third party liability resulting from a catastrophic launch accident. Congress reasoned that "[t]he potential unlimited liability that the commercial launch industry faces from third party claims is a deterrent to the development of a domestic commercial [launch] industry."[40] Congress stated:

> Commercial operators cannot be expected to provide hundreds of millions of dollars in liability self-insurance to gain a license to operate launch vehicles. Nor can domestic commercial operators be expected to pay exorbitant premiums which would eliminate any possible profit from these operations or make their services noncompetitive with foreign launch services.[41]

The indemnification was intended to be temporary, that is, "to facilitate the transition of the Nation's launch industry from a Government activity to a commercial activity."[42] A sunset provision in the CSLA provides that the indemnification expires unless the request is received by December 31, 2004.[43] The proposed legislation, H.R. 3245, provides for a three year extension of the indemnification,[44] a short horizon given the long lead time involved in space projects.

Government Indemnification for Commercial Human Spaceflight

The question of whether the Government should indemnify human spaceflight is twofold. First, the question is whether the current indemnification regime should distinguish between manned and unmanned flight in terms of providing indemnification in favor of the types of parties that currently benefit from the indemnification. These parties include the licensee and its customer and their respective contractors and subcontractors. There does not appear to be a reason to distinguish, as the rationale that supports indemnification of unmanned flights applies equally to manned flights.

Second, the question is also whether passengers should benefit from the indemnification, assuming they may be liable to third parties for any damage they cause. The answer to this question depends on the broader liability regime selected for them. If they are required to sign waivers, and if they are considered non-third parties and additional insureds under the licensee's third party liability insurance, it may be reasonable to extend the indemnification to them. On the other hand, if they are considered third parties that may sue the licensee and its contractors and subcontractors, or if they are otherwise indemnified through some type of "carrier" liability, it may not make sense to also extend the indemnification to them.

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38 *Id.* § 70113(a)(1)(B).

39 *Id.* § 70113(a)(1).

40 Commercial Space Launch Act Amendments of 1988, S. Rep. No. 100-593 (1988), at 17.

41 *Id.*, at 11.

42 *Id.*, at 22.

43 49 U.S.C. § 70113(f).

44 H.R. 3245, § 5. A Senate bill provides for an extension of the indemnification provision to December 31, 2009. S. 1260, § 3.

3. **WHAT CHANGES WOULD YOU RECOMMEND TO H.R. 3245? IN PARTICULAR, DO YOU SUPPORT COMMERCIAL HUMAN SPACE FLIGHT BEING REGULATED BY THE OFFICE OF COMMERCIAL SPACE TRANSPORTATION AT THE FEDERAL AVIATION ADMINISTRATION? IF NOT, WHERE AND IN WHAT MANNER WOULD YOU PROPOSE TO REGULATE COMMERCIAL HUMAN SPACE FLIGHT?**

Summary Answer: I would recommend: 1) Careful consideration of the possible implications of extending the FAA/AST's authority to human spaceflight through an amendment of CSLA definition of "payload;" 2) Careful consideration of whether the proposed safety regime for passengers is adequate to achieve H.R. 3245's goal of opening outer space to the American people; and 3) Clarification of the liability regime established by H.R. 3245 and consideration of whether it is adequate to achieve the bill's goal.

The Objectives of H.R. 3245

The articulated goal of H.R. 3245 is "the opening of outer space to the American people and their economic, scientific, and cultural enterprises is a priority goal which should guide Federal Space investments, policy development, and regulatory action."[45] To achieve this goal, H.R. 3245 should, at a minimum, accomplish these objectives: 1) clarify the FAA/AST's authority to license human spaceflight; 2) provide reasonable safety protection for passengers and crew; 3) impose a reasonable liability regime on passengers and crew; and 4) regulate only to the extent necessary.

Licensing Authority for Commercial Human Spaceflight

H.R. 3245 attempts to clarify that the FAA/AST has the authority to license commercial human spaceflight under the CSLA. The bill does so by amending the definition of "payload" to include an "individual," and not just an "object," as is currently the case. As noted above, the CSLA authorizes the FAA/AST to license the launch of a launch vehicle or reenter a reentry vehicle and any payload.[46] The new definition makes passengers and crew a payload.[47]

The implication of including crew and passengers as payloads is that the FAA/AST has so-called "payload determination" authority over crew and passengers under the CSLA. That means that the FAA/AST has the authority to "prevent the launch or reentry [of these individuals] if [the FAA/AST] decides the launch or reentry would jeopardize the public health and safety, safety of property, or national security or foreign policy interests of the United States."[48] It will be necessary to carefully consider other potential consequences of including "individuals" in the definition of "payload."

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45 H.R. 3245, § 2(3).

46 *See supra* note 3 (providing that the FAA has the authority to license the launch of a launch vehicle and the reentry of a reentry vehicle).

47 H.R. 3245 does not define "individual," but makes it implicitly clear that the term encompasses both crew and passengers, which the bill calls "spaceflight participants." The bill defines crew as "an individual or individuals carried within a launch or reentry vehicle who performs a function necessary for the protection of public safety." H.R. 3245, § 3(c)(2). A spaceflight participant means "an individual who is not crew carried within a launch or reentry vehicle during a launch or reentry." *Id.*, § 3(c)(4).

48 49 U.S.C. § 70104(c). The FAA has this authority for payloads that are not otherwise subject to U.S. government licensing or authorization. 14 C.F.R. §§ 415.51.

Safety Protection for Passengers and Crew

H.R. 3245 takes the position that Federal regulation of human spaceflight "should focus on protecting the safety of the general, uninvolved public, while allowing involved persons to assume risks which are inherent to human spaceflight activities."[49] In other words, H.R. 3245 provides that the FAA/AST's public health and safety mandate be directed at the general public, to the exclusion of passengers and crew. Accordingly, the FAA/AST's "payload determination" as to whether the launch would "jeopardize public health and safety" presumably would focus on whether the passenger/crew poses a hazard to the public at large, and not whether the spaceflight would be safe for the passenger or crew.

H.R. 3245 does temper this *laissez faire* safety treatment to some extent by imposing qualification requirements on passengers, designed to protect their safety, such as medical standards and a requirement for training. The question is whether this safety regime is sustainable. In other words, is this minimalist approach to safety regulation adequate to promote the bill's goal of opening outer space to the American people?

Liability Regime for Passengers and Crew

Again, H.R. 3245 takes the position that Federal regulation of human spaceflight should "allow[ ] involved persons [presumably passengers] to assume risks which are inherent to human spaceflight activities."[50] The first question is whether the bill as now styled achieves that objective. A separate question is whether such a liability regime is sustainable and whether it promotes the goals H.R. 3245 is trying to accomplish.

The liability treatment of passengers and crew in the bill is incongruous. H.R. 3245 treats passengers and crew as non-third parties, while at the same time depriving them of the protections afforded to other non-third party participants in launch and reentry services. H.R. 3245 amends the CSLA definition of "third party" to make clear that "crew and passengers" are not third parties. These individuals are added to a list of non-third parties, which includes the licensee, the customer and their respective contractors and subcontractors. Yet, crew and passengers do not benefit from the protection as additional insureds under the licensee's third party liability insurance, as do, e.g., the licensee's contractors, subcontractors, and customer. Passengers and crew also do not benefit from the CSLA indemnification.

It is not clear whether passengers or crew will have to sign the CSLA liability waiver. The waiver applies to the licensee and its "customers" and their contractors and subcontractors that are "involved in launch services." Are passengers and/or crew "customers?" The FAA defines customer as "the person who procures launch services . . . ,"[51] which is true of a passenger, but not crew. It would be a stretch to apply the remaining portion of the "customer" definition – providing that "any person who has placed property on board the payload" is a customer – to crew.

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[49] H.R. 3245, § 2(6); *see also id.*, § 4 (providing that the focus of commercial human spaceflight regulation should be on "protecting the safety of the general public, while allowing spaceflight participants who have been trained and meet license-specific standards to assume an informed level of risk").

[50] H.R. 3245, § 2(6).

[51] 14 C.F.R. § 440(a)(3).

Even assuming passengers meet the definition of "customer," are passengers "involved in launch services?" The waiver applies only to parties "involved in launch services." Furthermore, H.R. 3245's addition of "passengers" to a list of non-third parties that already contains "customers" suggests that passengers are not considered customers for purposes of the liability waiver under the bill. If the bill's intention was to extend the waiver to customers, that purpose may not have been achieved.

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Pamela L. Meredith advises clients on commercial space project planning, implementation, risk management, and contract dispute resolution issues. She has written numerous articles and a textbook on related topics and is a frequent speaker at satellite communications and space law conferences in the U.S. and internationally.

Ms. Meredith is also an Adjunct Professor of Satellite Communications and Space Law at American University's law school in Washington, D.C. – a course she started in 1989.

As part of her space law practice, Ms. Meredith drafts and negotiates commercial and U.S. government space contracts, including launch contracts, satellite manufacturing contracts, transponder lease agreements, and contracts for supply of spacecraft components and launch vehicle subsystems. She represents both U.S. and foreign companies and a foreign government.

Ms. Meredith advises on space project risk management and space insurance issues, including policy wording, coverage disputes, and insurance defense. Ms. Meredith also has testified as an expert witness for insurers in commercial space contract litigation.

Ms. Meredith advises on U.S. government export licensing and regulatory matters. She helps obtain licenses and approvals from the U.S. State Department. These include DSP-5 and DSP-83 licenses and approvals for Technical Assistance Agreements, Manufacturing Licensing Agreements, and retransfers of technology.

Ms. Meredith assists in obtaining launch licenses from the Federal Aviation Administration (FAA) and advises on FAA regulatory issues, including rulemakings. She also monitors Congressional legislative developments that may impact FAA launch licensing and regulation.

Ms. Meredith assists in obtaining licenses and other approvals for communications satellite services before the Federal Communications Commission (FCC). Ms. Meredith has assisted or advised on some aspect of most of the FCC rulemaking proceedings for communications satellites in the 1980s and 1990s, including fixed satellite service (C-, Ku-, Ka- and V-bands) and mobile satellite service (geostationary, big LEO and little LEO). She has also testified as an expert witness in litigation concerning the interpretation of FCC regulations.

Ms. Meredith is a Member of the District of Columbia and New York bars. She chairs the American Institute of Aeronautics and Astronautics' (AIAA) Legal Aspects Committee.

Select Publications:

Textbook:

Space Law: A Case Study For The Practitioner: *Implementing a Telecommunications Satellite Business Concept* (Martinus Nijhoff, 1992). (384 pages, co-authored: P.L. Meredith & G.S. Robinson).

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